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Etiology, clinical course, and antimicrobial resistance of bacterial agents of ventilator-associated tracheobronchitis in surgical and medical intensive care units in Hamedan, Iran

S.H. Hashemi[1,*], N. Hashemi[1], A. Taher[2], F. Esna-ashari[3], A. Dehghan[4]

[1] *Department of Infectious Diseases, Hamedan, Iran, Islamic Republic of*
[2] *Department of Anestesiology and Critical Care, Hamedan, Iran, Islamic Republic of*
[3] *Department of Social Medicine, Hamedan, Iran, Islamic Republic of*
[4] *Department of Pathology, Hamedan, Iran, Islamic Republic of*

Background: Ventilator-associated tracheobronchitis (VAT) is an important cause of mortality and morbidity in the hospitalized patients in the ICUs. Appropriate and early onset antibiotic therapy leads to better outcome. This study was conducted to determine the frequency of bacterial agents and antimicrobial resistance, clinical course and response to treatment of VAT in the hospitalized patients in a surgical and a medical intensive care unit (ICU) of teaching hospitals in Hamedan, Iran.

Methods & Materials: In a cross-sectional study in 2014, hospitalized patients who had the criteria for the diagnosis of VAT in medical ICU of Sina Hospital and surgical ICU of Besat Hospital in Hamedan were enrolled. Tracheal samples of patients were investigated in terms of smear, culture and antibiotic sensitivity. Furthermore, demographic characteristics, underlying diseases, clinical aspects, progression to pneumonia and response to the treatment were collected by checklist. Data were analyzed by using SPSS-16.

Results: In this study, 69 patients were included, of whom, 28 patients (40/6%) were female and 41 (59/4%) were male. The incidence of VAT was 6/44%. The mean age of the patients was 55/92 ± 21/98 years. The most isolated bacteria consisted of Acinetobacter baumannii (30/4%), Pseudomonas aeruginosa (20/3%), and Enterobacter (13%). In surgical ICU, Pseudomonas aeruginosa and Enterobacter spp. were the most common isolates. In medical ICU, Acinetobacter baumannii and Klebsiella pneumoniae were the most common bacteria. Over all, 63/3% of the isolates were multidrug resistant, out of which 71% related to the medical ICU and 29% to the surgical ICU. All the isolates of Acinetobacter baumannii and Citrobacter freundii were multidrug resistance. Also, 23 patients (33/3%) progressed to pneumonia. The mean time of response to treatment was 4/98 ± 4.7 days, and 27/5% of the patients were discharged after tracheostomy. Thirty-eight patients (98.6%) died in spite of antimicrobial therapy.

Conclusion: Multidrug resistant pathogens are common causes of VAT. A high proportion of VAT patients lead to pneumonia and death. Considering the difference between the kind of pathogens and antibiotic resistance in different ICUs, it is necessary to utilize the intended data of each region for defining the appropriate empirical treatment protocol.

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Nosocomial infection in an intensive care unit of a tertiary hospital in Nigeria: A 4 year review

G. Iliyasu[1,*], F. M Dayyab[2], S. Abubakar[3], Z. G Habib[2], A. G habib[3], A. M Sarki[3]

[1] *Bayero University Kano, Kano, Kano, Nigeria*
[2] *Aminu Kano Teaching Hospital, Kano, Nigeria*
[3] *Bayero University Kano, Kano, Nigeria*

Background: Infection is one of the major factors that determine clinical outcome among patients requiring intensive care unit (ICU) support. The attending mortality is high and depends on source of infection, organisms associated, timeliness and appropriateness of the treatment received.

Methods & Materials: Case records of patients who were admitted into our 5bedded ICU over a 4 year period were retrospectively reviewed. The average number of admission was 20 per month. A preformed questionnaire was administered and data on clinical and microbiological profile of all the patients with documented infection was obtained.

Results: Eighty four episodes of infections were identified in 76 patients. Road traffic accident 29/76(38.2%) and pulmonary embolism12/76(15.8%) were the leading cause of admission. The most common infection was skin and soft tissue infection (SSI) 30/84(35.7%) followed by UTI 23/84(27.4) and primary bacteraemia 18/84(21.4) with the least being VAP 3/84(3.6%). Most of the cases of UTI occurred in patients with RTA and renal failure, while the highest number of primary bacteraemia was seen among patients with burns and renal failure. The most frequent isolates were *S. aureus* 35/84(41.7%), *K. pneumonia* 18/84(21.4%) and *E. coli* 13/84(15.5%). *K. pneumonia* 2/5(40%) and *P. aerugenosa* 1/5(20%) were the leading cause of pneumonia, while *S. aureus* was the commonest cause of SSI 16/30(53.3%), primary bacteremia 10/18(55.6%) and line infection 5/5(100%). There were 3 cases of VAP one each caused by *K. pneumonia*, *P. aerugenosa* and *S. aureus*. High rate of resistance to cloxacillin 19/35(54.3%) and co-trimoxazole 17/26(65.4%) was noted among the *S. aureus* isolates. All the enterobactrecae isolates that were tested against meropenem were fully susceptible, while resistance rate to ceftriaxone was high; *E. coli* 5/9(55.6%), *K. pneumoniae* 10/14 (71.4%) and *proteus spp* 2/4 (50%). With exception to meropenem and colistin, ciprofloxacin had a better resistance profile against *P. aerugenosa* and isolated enterobactriacae compared to the other tested B-lactam agents.

Conclusion: The study underscores the need to improve infection control practice in our ICU. Resistance to commonly used antibiotic was high and this makes the choice of empiric antibiotic difficult, hence measures to curtail the emergence of resistance pathogens need to be adopted.

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